Space Weather Forecast

Issued on Monday, 19 February 2024 at 13:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate flares. Low confidence of CME (coronal mass ejection) arrival on 19 or 20 February.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Low solar activity with only Common-class flares observed, the strongest of these early on 19 February from a region which is rotating onto the visible side of the Sun. This is one of five active regions on the visible disc, with a further one just beyond the southwest limb still presenting a decreasing flare risk. Of the visible regions the region close to the western limb remains large and complex, but is becoming difficult to analyse. A region in the north centre disc appears to be evolving modestly. The remaining numbered regions are both simple and benign. No potential Earth-directed CMEs have been observed over the last 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds have been at ambient levels on a generally declining trend. The total magnetic field strength was weak, with the north-south component varying weakly. Geomagnetic activity has been Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was slightly above background levels but well below the level of a Minor Solar Radiation Storm.

Four-Day Space Weather Forecast Summary
Solar Activity: Mainly Low activity is expected, with a risk of Moderate activity from either of the regions close to the northwest or southwest limb. A previously active returning region could rotate onto the southeast limb from 21 February.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 16 February may glance the Earth either on 19 or 20 February, but with low confidence. Otherwise solar wind speeds are expected to remain at ambient levels, with fast solar winds expected to connect with the Earth. Geomagnetic activity is forecast to be mainly Quiet, with a slight chance of Unsettled or Active intervals on 19 or 20 February due to the potential CME arrival.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to continue easing to background levels. However, there is a slight chance further enhancements due to any further significant eruptions that occur from the large sunspot that is now over the southwest horizon.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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